

CLAIMS

What is claimed is:

1. A wafer level packaging structure comprising:
 - a substrate, which contains a pad;
 - 5 an insulating layer, which is installed on the substrate with a connection part that exposes the pad and a suspension part that suspends above the substrate;
 - a bump, which is formed above the suspension part; and
 - a metal wire, which is installed above the connection part and the suspension part, electrically connecting the pad and the bump;
 - 10 wherein the suspension part oscillates to release a stress received by the bump to protect the electrical connection between the bump and the pad.
2. The wafer level packaging structure of claim 1 further comprising a plurality of suspension beams installed on the insulating layer and connected to the bump to fortify the structural strength of the bump.
- 15 3. The wafer level packaging structure of claim 1 further comprising a sacrificial layer installed between the insulating layer and the suspension part, right below the bump; wherein the connection between the sacrificial layer and the substrate cracks when the stress received by the bump becomes overloaded.
4. The wafer level packaging structure of claim 3 further comprising a plurality of
20 suspension beams installed on the insulating layer and connected to the bump to fortify the structural strength of the bump.
5. The wafer level packaging structure of claim 3, wherein the material of the sacrificial layer is selected from the group consisting of metals, epoxy, organic polymers,

and inorganic oxides.

6. The wafer level packaging structure of claim 1 further comprising a sacrificial layer and an elastic layer, the former being installed above the latter and both of which being sandwiched between the substrate and the suspension part of the insulating layer right
5 below the bump, wherein the elastic layer absorbs excess stress received by the bump to protect the electrical connection between the bump and the pad.

7. The wafer level packaging structure of claim 6 further comprising a plurality of suspension beams installed on the insulating layer and connected to the bump to fortify the structural strength of the bump.

10 8. The wafer level packaging structure of claim 6, wherein the material of the sacrificial layer is selected from the group consisting of metals, epoxy, organic polymers, and inorganic oxides.

9. The wafer level packaging structure of claim 1 further comprising an elastic layer installed between the substrate and the suspension part of the insulating layer below the
15 bump, wherein the connection between the elastic layer and the substrate cracks to release the overloaded stress received by the bump.

10. The wafer level packaging structure of claim 9 further comprising a plurality of suspension beams installed on the insulating layer and connected to the bump to fortify the structural strength of the bump.

20 11. A wafer level packaging structure comprising:

a substrate, which contains a plurality of pads;

a first insulating layer, which is installed on the substrate to expose all of the pads;

a second insulating layer, which contains a first connection part and a second

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connection part connected together, the first connection part being installed above the first insulating layer and the second connection part being installed on the substrate, with the adhesive force between the second connection part and the substrate smaller than that between the first connection part and the substrate;

a plurality of bumps above the second connection part; and

a plurality of metal wires, which are installed above the first connection part and the second connection part, electrically connecting the pads and the bumps;

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wherein the connection between the second connection part and the substrate cracks when the stress received by the bump is overloaded.

12. The wafer level packaging structure of claim 11 further comprising a plurality of suspension beams installed on the second insulating layer and connected to the bump to fortify the structural strength of the bump.